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56. The patch bag according to Claim 1, wherein the first heat-shrinkable film comprises linear homogeneous ethylene/alpha-olefin copolymer in an amount of from about 15 to 100 weight percent, and the heat-shrinkable film has been oriented from a solid phase using a tenter frame. ---

REMARKS

The Pending Claims, Support for New Claims 43-56

Applicants note that upon entry of newly-presented Claims 43-56 and the cancellation of Claims 13 and 32, the pending claims are Claims 1-12, 14-31, and 33-56. Claims 13 and 32 are hereinabove canceled because they are duplicative of Claims 12 and 27, respectively. Support for newly-presented Claims 43 and 44 can be found in the specification at, for example, Page 4 lines 13-28 in combination with Page 16 lines 25-31. Support for newly-presented Claims 45 and 46 can be found in the specification at, for example, Page 20 lines 15-17. Support for newly-presented Claim 47 can be found at, for example, Page 4 lines 17-20. Support for newly-presented Claims 48 and 49 can be found at, for example, Page 20, lines 12-14. Support for newly-presented Claims 50 can be found at, for example, Page 4 lines 24-28 taken together with Page 17 lines 9-29. Support for newly-presented Claims 51 can be found at, for example, Page 20 lines 15-17. Support for newly-presented Claims 52 can be found at, for example, Page 4 lines 24-28 in combination with Page 17 lines 9-29. Support for newly-presented Claim 53 can be found at, for example, Page 34 lines 1-30. Support for newly-presented Claim 54 can be found in the specification at, for example, Page 4 lines 13-28. Support for

newly-presented Claims 55 can be found in the specification at, for example, Page 17 lines 9-29. Support for newly-presented Claims 56 can be found in the specification at, for example, Page 4 lines 24-28, in combination with Page 16 lines 25-31, further in combination with Page 29 lines 10-18.

II. The Rejection of Claims 1-42 under 35 U.S.C. 103, as Obvious over FERGUSON in view of ELSTON and CHUM et al.

A Review of the Rejection

In the 4 October 1999 Office Action, Claims 1-42 are rejected as obvious over U.S. Patent No. 4,770,731, to Ferguson, ("FERGUSON") in view of U.S. Patent No. 3,654,992 to Elston ("ELSTON") and U.S. Patent No. 5,427,807, to Chum et al ("CHUM et al"), for the same reasons set forth in the Paragraph 1 of Paper No. 18 (Office Action of August 19, 1997, which in turn also refers to the Office Action prior thereto, i.e., the Office Action of 13 December, 1996). With a focus primarily on the patentability of the independent claims, Applicants summarize the prosecution history of this rejection as follows.

The 13 December Office Action states that FERGUSON discloses a heat-shrinkable bag having a heat-shrinkable patch adhered thereto, and that ELSTON discloses homogeneous ethylene/alpha-olefin copolymer as providing decreased haze, increased impact strength, increased resistance to delamination, and improved balance of properties in the machine and transverse directions, and that CHUM et al discloses substantially linear long chain branched homogeneous ethylene/alpha-olefin copolymers as providing flow properties wherein the I_{10}/I_2 is independent of polydispersity. The Examiner concluded that it would have been obvious to one of ordinary skill in the

art, at the time the invention was made, to substitute the homogeneous copolymer of ELSTON for the LLDPE of FERGUSON and to use such copolymer in the patch bag of FERGUSON to obtain the properties disclosed by ELSTON, and that the properties of ELSTON are toward reducing likelihood of bone puncture. Moreover, the disclosure of CHUM et al would have led to the use of long chain branched homogeneous ethylene/alpha-olefin if the flow properties of CHUM et al are desirable.

In response to this rejection, Applicants amended their independent Claims 1 and 28 to recite the first film (i.e., the patch film) as having a total free shrink at 185°F of from about 10 to 100 percent. Applicants thereafter argued that neither FERGUSON nor ELSTON nor CHUM et al disclose a film containing a homogeneous ethylene/alpha-olefin copolymer having this free shrink. Moreover, Applicants argued that it is unpredictable as to whether homogeneous ethylene/alpha-olefin copolymer in ELSTON can be used to obtain a total free shrink of 10 to 100% at 185°F, and Applicants argued that neither FERGUSON nor ELSTON nor CHUM et al motivates one of skill in the art to make a film containing homogeneous ethylene/alpha-olefin copolymer having from 10% to 100% free shrink at 185°F, and that 185°F is a relatively low temperature for a film to have such a free shrink., and that many polymers cannot be used to produce such a film. Applicants pointed out that the films of ELSTON and CHUM et al are blown films, which are known not to exhibit free shrink values as high as 10% at 185°F. Applicants further argued that their patch film exhibited unexpectedly high impact strength, i.e., an impact strength as high as, or even higher than, the impact strength of the films disclosed in FERGUSON. Applicants further argued that the disclosure in ELSTON of improved impact strength for the blown films disclosed therein does not necessarily mean that the polymer of ELSTON will produce similar results in heat shrinkable films.

The 19 August Office Action reiterates the rejection of the pending claims as obvious over FERGUSON in view of ELSTON and CHUM et al, for the reasons set forth in the 13 December Office Action, and responds to Applicants' arguments with the statement that since the polymers of ELSTON and CHUM et al are the same as Applicants' recited polymer, they can be oriented at low temperature and provide the free shrink recited in the amended independent claims, and whether other copolymers could not provide such free shrink is irrelevant because the polymers of ELSTON and CHUM et al are the same as Applicants' recited copolymer, and therefore could provide the free shrink recited in the amended claims. Moreover, the Office Action acknowledges Applicants' argument that ELSTON is not disclosing higher impact strength for a heat-shrinkable film, but that this difference does not show that Applicants are 100% sure that the copolymer of ELSTON will not yield higher impact strength, and that Applicants have not shown that the polymer of ELSTON will not provide higher impact strength, and that Applicants have concluded, without evidence, that the copolymer of ELSTON will not provide higher impact strength. As to Applicants' argument that the properties of blown films are often not obtained in heat-shrinkable films, the rejection is not restricted to a specific type of film, and Applicants have not compared the claimed invention with the closest prior art.

Applicants' Response to the §103 Rejection

Applicants continue to maintain that the pending claims are patentable over FERGUSON in view of ELSTON. Applicants note that ELSTON discloses using a homogeneous ethylene/alpha-olefin copolymer to make a blown film, not a heat-shrinkable film, and that as such one of ordinary skill in the art would not have been led to use a homogeneous copolymer such as disclosed in a blown film

in ELSTON to prepare the heat-shrinkable patch film recited in Applicants' claims. Those of skill in the art of film making would have recognized that blown films and heat shrinkable films are separate fields, requiring different and distinct technical challenges and raw materials. In addition, Applicants submit herewith a §131 Declaration swearing behind the 26 April 1993 filing date of CHUM et al.

A. The Pending Claims Are Patentable over FERGUSON in view of ELSTON: Substituting the Resin of ELSTON for the LLDPE in FERGUSON Is Inoperable

Applicants contend that each of the pending independent claims, i.e., Claims 1, 28, and 33, and all claims depending therefrom, are patentable over FERGUSON in view of ELSTON for several reasons. Applicants provide herewith a Declaration under 37 C.F.R. 1.132, which establishes firstly that the resins of ELSTON are the equivalent of the homogeneous ethylene/alpha-olefin resins of Exxon, and secondly that the use of the homogeneous ethylene/alpha-olefin copolymers from Exxon are not simply a "drop in" for the LLDPE resin used in the patch film for the patch bag of FERGUSON. In other words, the very combination of teachings utilized in the rejection of the claims, when attempted by one of skill in the art, was not operable. The combination could only be rendered operable by undue experimentation which is not only beyond the teachings and suggestion of both FERGUSON and ELSTON, is also beyond the level of ordinary skill.

The §132 Declaration sets forth facts associated with the making of the present invention. More particularly, as stated in Paragraph 4 of the §132 Declaration, initial work to produce a heat-shrinkable film by substituting linear homogeneous copolymer equivalent to the polymer of ELSTON for the LLDPE in the patch film disclosed in FERGUSON, using the extrusion process disclosed in FERGUSON, resulted in no quality film being produced. More particularly, the linear homogeneous

resin exhibited so low a melt strength that the extrudate did not survive the downward tape casting step used in the commercial production of heat shrinkable films. Moreover, the film which did happen to survive the downward casting resulted in a hazy, streaked film unsuitable for commercial use. This result is contrary to the teachings of both Exxon personnel and ELSTON. See Paragraph 4 of the §132 Declaration. That is, when an attempt to substitute the linear homogeneous ethylene/alpha-olefin copolymer from Exxon for the 87% LLDPE in FERGUSON, i.e., the substitution being at the 87% level, no useful film could be produced in a process as otherwise disclosed in FERGUSON. See Paragraph 7 of the §132 Declaration. This is precisely the substitution suggested in the Office Action, and it was inoperable due to the low melt strength of the linear homogeneous ethylene/alpha-olefin copolymer. Even efforts to improve the melt strength by lowering the extruder temperature, and increasing the EVA content, failed to result in a heat-shrinkable film in accordance with FERGUSON. See Paragraph 7 of the §132 Declaration. Mr. Childress has concluded that one of ordinary skill in the art would have to conduct undue experiments to determine whether any linear homogeneous resin, whether supplied by Exxon or taught by ELSTON, could be used to replace LLDPE in the patch film in FERGUSON. See Paragraph 7 of the §132 Declaration. Furthermore, a colleague of Mr. Childress, Mr. Gautam Shah, reported to Mr. Childress that he experienced similar problems in attempting to use linear homogeneous resin to make heat-shrinkable films. See Paragraph 5 of the §132 Declaration.

In order to arrive at a heat-shrinkable film containing the homogeneous copolymer, Mr. Childress made a patch film containing homogeneous copolymer in an amount of only 15 weight percent, based on total film weight, thereafter increased to 23.5 weight percent, both of which were operable, but both of which are far from being a drop-in substitution for the LLDPE (87%) in the film

of FERGUSON, i.e., as suggested in the Office Action. Mr. Childress eventually devised a method for using homogeneous resin to make a heat-shrinkable patch film on commercial equipment. More particularly, Mr. Childress repaired the low melt strength of the Exxon homogeneous ethylene/alpha-olefin copolymer by blending it with high density polyethylene or low density polyethylene, or by providing the patch film with additional supporting layers. See Paragraphs 8 and 9 of the §132 Declaration. However, none of these solutions to the low melt strength problem are suggested by FERGUSON or ELSTON.

Mr. Childress went still further in coming to the conclusion that the linear homogeneous ethylene/alpha-olefin copolymer could be successfully used to make a heat-shrinkable patch film if a flat cast process coupled with a tenter frame orientation is substituted for the commercial downward cast process for making a heat shrinkable film. See Paragraph 9 of the §132 Declaration. However, such a process is neither taught nor suggested by FERGUSON. In fact, it should be noted that FERGUSON actually teaches to use a different process from the flat cast process, by teaching to make the patch film using a *downward* cast process. See Column 4 lines 44-49 of FERGUSON, which discloses the making of the patch film by extruding "downwardly," hence teaching in a different direction from one of the solutions Mr. Childress developed.

C. Additional Reasons for the Patentability of the Pending Claims

In the previous response to the rejection based on FERGUSON in view of ELSTON and CHUM et al, Applicants argued that it would not have been obvious to one of ordinary skill in the art to employ a teaching from the blown film art to the field of making heat-shrinkable film. Again, ELSTON discloses blown film containing homogeneous copolymer. As demonstrated in the use of

Exxon homogeneous ethylene/alpha-olefin copolymer, such homogeneous copolymer could not be successfully used to make a heat-shrinkable film in the manner described by FERGUSON. As is pointed out in Paragraph 7 of Mr. Childress' Declaration under 37 CFR 1.132, those of skill in the art are well aware that a polymer which is operable to make a blown film is not necessarily operable to make a heat shrinkable film. The resin requirements for making heat shrinkable films differ from the resin requirements for making blown films. A resin which can be used to make a blown film may not be operable for making the film recited in Applicants' claim, and vice-versa. Blown films and heat-shrinkable films are separate fields, presenting distinct technical challenges and utilizing raw materials with differing properties. Applicants continue to maintain this position, and Applicants continue to maintain the position that it is improper to apply the disclosure of a blown film in an effort to deem obvious the making of a heat shrinkable film with the same resin used to make the blown film. Those of skill in the art realize that there is no certainty that a resin suitable for making a blown film will be suitable for making a heat shrinkable film, especially impact-resistant films suitable for a heat-shrinkable patch. Mr. Childress' §132 Declaration provides evidentiary support for this view, as the linear homogeneous resin selected by the Examiner as a replacement for LLDPE turned out not to be operable as a drop-in substitute for the 87% LLDPE in the first layer of the patch film disclosed in FERGUSON.

In addition to the argument that those of skill in the art know that blown films and heat shrinkable films present different technical challenges and utilize different materials, Applicants have discovered that homogeneous ethylene/alpha-olefin copolymers can be used to make films having unexpectedly high impact strength. As argued in Applicants' previous response, Applicants have

discovered that the heat-shrinkable patch film of the patch bag of their invention can provide an unexpectedly high impact strength. See the impact strength results disclosed in TABLE II, on page 28 of Applicants' specification. As can be seen in TABLE II, Film Nos. 1, 2, and 5, i.e., films as recited in Applicants' claims, exhibited impact strengths of 97 pounds, 109 and 88 pounds, respectively. In contrast, Film Nos. 3 and 4, both of which are comparative films in accordance with FERGUSON, exhibited impact strength of 100 and 87 pounds, respectively. It should be noted that the impact strength of the films of comparative Film Nos. 3 and 4 is unexpectedly high because FERGUSON states that the impact of LLDPE is surprisingly high, and the impact of Film Nos. 1 and 2 is approximately equivalent to the film of FERGUSON, which is LLDPE-based. Applicants contend that obtaining a heat-shrinkable film having an impact strength comparable or superior to the impact strength of the films in accordance with FERGUSON is surprising and unexpected. An impact strength of 88 to 109 pounds, for heat-shrinkable films having a thickness of about 4.7 mils, is surprising and unexpected.

Although ELSTON discloses that homogeneous polymer provide higher impact strength in blown film, this does not indicate that a heat-shrinkable film containing homogeneous ethylene/alpha-olefin copolymer will necessarily have higher impact strength. On the contrary, Applicants have discovered that the properties present in blown films do not necessarily translate to heat-shrinkable films. Rather, properties obtained in blown films are often not obtained in heat-shrinkable films. In other words, those of skill in the art of manufacturing heat shrinkable films recognize that an advantageous characteristic obtained from the use of a new polymer in a blown film does is not necessarily obtainable if the new polymer is used in a heat shrinkable film. That is to say, a polymer

type which shows superior impact performance as a cast or blown film may show reduced performance as a heat shrinkable film. One cannot predict whether a given property, such as impact strength, will be higher in a heat-shrinkable film if it is known to be higher in a blown film. Accordingly, it is apparent that impact strength across polymers is not predictable if the comparison is also across packaging film types, especially blown films versus heat-shrinkable films.

It should not be forgotten that the rejection based on U.S. Patent No. 5,302,402, to Dudenhoeffer et al ("DUDENHOEFFER et al"), was withdrawn after Applicants' pointed out that DUDENHOEFFER et al discloses a "blown, non heat-shrinkable film" as the patch film. See Column 11 lines 46-47 of DUDENHOEFFER et al. Clearly, DUDENHOEFFER et al is a teaching which is directly away from a *heat-shrinkable* patch film. Moreover, DUDENHOEFFER et al stands as support for the technical position that a blown patch film is not a heat shrinkable patch film.

B. CHUM et al is Not Prior Art

Applicants direct attention to Column 10 lines 19-27 of CHUM et al, which discloses using homogeneous ethylene/alpha-olefin copolymer to make a heat-shrinkable film. However, the accompanying Declaration under 37 CFR 1.131 establishes that Applicants reduced to practice their heat-shrinkable patch film before the 26 April 1993 filing date of CHUM et al. It should be noted that the parent of CHUM et al is a continuation-in-part of USSN 776,130, filed October 15, 1991, now USPN 5,272,236, which in turn does not disclose heat-shrinkable films, but does disclose blown films.[1] More particularly, the Declaration under §131 establishes that Applicants had possession of their heat-

[1] Applicants again note that there are significant technical distinctions between heat-shrinkable films and blown films, as argued above.

shrinkable patch film before the 26 April 1993 filing date of USSN 54,334, which matured into CHUM et al. As can be seen from a review of Exhibits A, B1, B2, C1, C2, and D submitted with the §131 Declaration, Applicants had produced heat-shrinkable films for use as patches on bags prior to the 26 April 1993 filing date of CHUM et al. Moreover, prior to 26 April 1993, Applicants had tested these heat-shrinkable films to determine their performance capabilities in patch bags. As a result, Applicants contend that CHUM et al is not a reference against their claims, as they were in possession of their claimed invention before the 26 April 1993 filing date of CHUM et al.

More particularly, as stated in the §131 Declaration, and as shown in Exhibits A, B1, B2, C1, C2, and D accompanying the §131 Declaration, Applicants have (before 26 April 1993) made and tested for performance heat-shrinkable films for use as patches for patch bags. All of these activities took place in the United States. The §131 Declaration establishes that Applicants made an "A/B//B/A" film structure in an experimental run entitled "B003 Alternate Resins." See highlighted portions of Exhibit C1. At the time the work was performed, the terms "B002" and "B003" were Applicants' internal codes for heat-shrinkable films used as patches for patch bags. Immediately below the phrase "A/B//B/A," i.e., near the bottom center of Exhibit C1, attention should be directed to "A= 87% LLDPE, 10.0% Exxon Exact (SLP 3011D) and 3.0% additive package" and "B= Exxon Exact SLP 4008," each of which are directed to the chemical composition of the "A" and "B" layers of the patch film. The chemical composition of the "A" layer, although partially redacted because it contained Applicants' proprietary codes, can clearly be seen to also have contained 10 weight percent of an EXACT® resin, which is a linear

homogeneous ethylene/alpha-olefin copolymer, obtained from Exxon. See lower right of Exhibit C1. Moreover, this same portion of Exhibit C1 also discloses that the "B" layer was also made from another Exxon resin, which was also a linear homogeneous ethylene/alpha-olefin copolymer. Exhibit C1 also provides the "racking ratio" of "3.72" near the lower left corner of the page. This indicates that the film was stretched to provide a heat-shrinkable film as is confirmed by Exhibit D, which provides the longitudinal and transverse (L & T) free shrink values at 185°F for FDX 4316, which is the film of Exhibit C. Thus, it is clear from Exhibit C1 alone that Applicants were in possession of their invention before 26 April 1993 filing date of CHUM et al., as the dates redacted from Exhibit C1 are all before 26 April 1993.

Exhibit C1 is a copy of the notebook page which sets forth the conditions under which the film was made. Exhibit C2, entitled "FDX 4316," is a copy of a page from a code book which contains experimental film formulations which were produced. Exhibit C2 is a copy of the code book page which corresponds with the notebook page which is Exhibit C1. It should be noted that Exhibit C2 also refers to a "Modified B003 Structure," further indicating that the film is being produced as a patch film for a patch bag. Moreover, Exhibit C2 supports the composition of the A and B layers, again providing evidence that each contained homogeneous ethylene/alpha-olefin copolymer. Moreover, Exhibit D of the §131 Declaration shows that the films produced under B1 and C1 had a free shrink within the range of 10-100% at 185°F. As with Exhibit C1, all dates redacted from Exhibit C2 are before April 26, 1993.

Turning to Exhibits B1 and B2, similar observations can be made. That is, the "B" layer in the film of Exhibits B1 and B2 was also made from an Exxon homogeneous ethylene/alpha-olefin

copolymer. Exhibit D provides the L and T free shrink values at 185°F for the film of Exhibit B, i.e., FDX 4315. Thus, Exhibits B1, B2, C1, C2, and D together provide evidence that Applicants made heat-shrinkable films for use as patches in patch bags prior to the 26 April 1993 filing date of CHUM et al.

In addition to providing free shrink values for the films of Exhibits B1, B2, C1 and C2, Exhibit D also provides impact strength values for these films, as well as free shrink and impact values for the B003 control film, i.e., a commercial embodiment of the patch film disclosed in FERGUSON, more particularly the control film of Exhibit A. Although Exhibit D is not dated, Exhibit D was written before 26 April 1993.

In Exhibits A, B1, B2, C1, C2, and D, confidential information has been redacted. The redacted confidential information includes the dates on which various heat-shrinkable films were made, dates of testing of those heat-shrinkable films, various processing conditions related to production manufacturing conditions, resin codes, etc. Again, all of the redacted dates are prior to the 26 April 1993 filing date of CHUM et al. The undersigned has substituted (in red ink) generic resin terminology for the redacted confidential codes, and Applicants have highlighted the especially important information in each of the exhibits.

Based on all of the above evidence, it is clear that Applicants had possession of their claimed invention, and had carried out an actual reduction to practice in the United States, and tested film for operability, all these events occurring before the 26 April 1993 filing date of CHUM et al.

CONCLUSION

In summary, it is clear from the content of the §132 Declaration that Mr. Childress undertook extensive experimentation to make a linear homogeneous ethylene/alpha-olefin resin operable in a heat-shrinkable patch film formulation made in accordance with downward cast process disclosed in FERGUSON. As such, Mr. Childress has clearly established, by way of his extensive experimentation with Exxon linear homogeneous ethylene/alpha-olefin resins, that the very combination made in the rejection, i.e., FERGUSON in view of ELSTON, would not have lead one of ordinary skill in the art to Applicants' claimed invention in the absence of undue experimentation. In addition, Applicants and others (again, see the above discussion of DUDENHOEFFER et al) recognize a distinction between heat-shrinkable films and non heat-shrinkable films, i.e., blown films, and Applicants again point out that the heat-shrinkable patch film of their claimed patch bag exhibits surprisingly high impact strength.

Reconsideration of the patentability of the invention is respectfully requested, based on the amendments, evidence, and arguments submitted herewith, with a view towards allowance.

Respectfully Submitted,

Rupert B. Hurley Jr.
Reg. No. 29,313
(864) 433-3247

Cryovac, Inc.
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